



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,455	01/11/2002	Ming-Jun Li	SP01-029	8424
22928	7590	11/24/2003	EXAMINER	
CORNING INCORPORATED SP-TI-3-1 CORNING, NY 14831			MOONEY, MICHAEL P	
			ART UNIT	PAPER NUMBER
			2877	

DATE MAILED: 11/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/044,455

Applicant(s)

LI ET AL.

Examiner

Michael P. Mooney

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 8 is/are rejected.
- 7) ☒ Claim(s) 3-7 and 9-14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_ 6) ☐ Other: \_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claims 1-2 are rejected under 35 U.S.C. 103a as being unpatentable over Okuno et al. (6501892).**

Okuno et al. teaches a dispersion and dispersion slope compensating optical waveguide fiber including: a core region surrounded by and in contact with a clad layer, said core region including three segments, a central segment and a first and a second annular segment surrounding said central segment, each said segment having respective radii,  $r_{sub.i}$ , relative refractive index percents,  $\Delta_{sub.i}\%$ , where  $i$  takes on values 1, 2, and 3 beginning with 1 for the central segment, and refractive index profiles; wherein,  $\Delta_{sub.1}\%$  is greater than 1.4%;

although Okuno et al. does not explicitly state "greater than 1.4%" for .DELTA..sub.1% , Okuno et al., at col. 13 lines 50-60, teaches that .DELTA..sub.1% is fixed at 1.4%. It would have been prima facie obvious to one of ordinary skill in the art to state that .DELTA..sub.1% is greater than 1.4%. The MPEP addresses this as follows:

### **2144.05 Obviousness of Ranges**

#### **I. OVERLAP OF RANGES**

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Geisler, 116 F.3d 1465, 1469-71, 43 USPQ2d 1362, 1365-66 (Fed. Cir. 1997) (Claim reciting thickness of a protective layer as falling within a range of "50 to 100 Angstroms" considered prima facie obvious in view of prior art reference teaching that "for suitable protection, the thickness of the protective layer should be not less than about 10 nm [i.e., 100 Angstroms]." The court stated that "by stating that suitable protection' is provided if the protective layer is about' 100 Angstroms thick, [the prior art reference] directly teaches the use of a thickness within applicant's] claimed range."). Similarly, a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. Titanium Metals Corp. of America v. Banner, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (Court held as proper a rejection of a claim directed to an alloy of "having 0.8% nickel, 0.3% molybdenum, up to 0.1% iron, balance titanium" as obvious over a reference disclosing alloys of 0.75% nickel, 0.25% molybdenum, balance titanium and 0.94% nickel, 0.31% molybdenum, balance titanium.).

There clearly is an overlap of ranges in this instance with respect to the 1.4% value.

Furthermore, Okuno et al. teaches r.sub.1 is less than 3 .mu.m; .DELTA..sub.2% is more negative than -0.3%, r.sub.2 is greater than 6 .mu.m; .DELTA..sub.3% is greater than 0.15%, r.sub.3 is greater than 9 .mu.m; .DELTA..sub.1% is greater than .DELTA..sub.3%, r.sub.3 is greater than r.sub.2; and, the combination of .DELTA..sub.i%'s and r.sub.i's provides a negative total dispersion slope and a ratio of

total dispersion to total dispersion slope in the range of 40 nm to 60 nm at a wavelength of 1550 nm. (figs. 1A-1B, 7, 8A-8E; col. 5 lines 45-55; col. 13 line 45 to col. 14 line 62).

Thus, claim 1 is rejected.

Furthermore, by the same reasoning/references given above each and every element of claim 2 is unpatentable over Okuno et al. Thus, claim 2 is rejected.

**Claim 8 is rejected under 35 U.S.C. 103a as being unpatentable over Gruner-Nielsen et al, "Dispersion Compensating Fibers", Optical Fiber Technology, Vol. 6, 10/25/99, pp. 164-180 (hereinafter referred to as "Gruner-Nielsen et al. paper") and further in view of Gruner-Nielsen et al. (6490398).**

Gruner-Nielsen et al. paper teaches a total dispersion and total dispersion slope compensated optical waveguide fiber span including; a first length  $L_{sub.1}$  of optical waveguide fiber having, at 1550 nm, a positive total dispersion and total dispersion slope; a second length  $L_{sub.2}$  of optical waveguide fiber having, at 1550 nm, a negative total dispersion and negative total dispersion slope, said second length optically coupled in series arrangement with said first length; (See: p. 172, 1<sup>st</sup> full paragraph, pp. 166-170, etc.).

Although Gruner-Nielsen et al. paper does not explicitly state "the ratio of total dispersion to total dispersion slope, at 1550 nm of said first and second lengths are equal to each other to within 5%," Gruner-Nielsen et al. paper does teach, at p. 172 2<sup>nd</sup> full paragraph, introducing a few meters special intermediate fiber spliced in between the DCF and the standard fiber. Furthermore, although Gruner-Nielsen et al. paper

does not explicitly state length of transmission fiber used to be 100 km, Gruner-Nielsen et al. (6490398) does teach using a transmission fiber in the 100 km length range (col. 9 line 65 to col. 10 line 35).

Additionally, 100km of the non-shifted fiber from Table 1 on page 166 of Gruner-Nielsen et al. paper has  $1/.0034=294\text{nm}$  ratio of total dispersion to total dispersion slope; a few meters of WB DCF fiber from Table 3 on page 170 of Gruner-Nielsen et al. paper has  $1/.0035=286\text{nm}$  ratio of total dispersion to total dispersion slope. The values 294nm and 286nm clearly satisfy the limitation "the ratio of total dispersion to total dispersion slope, at 1550 nm of said first and second lengths are equal to each other to within 5%".

Gruner-Nielsen et al. paper and Gruner-Nielsen et al. (6490398) are combined by taking the technology of Gruner-Nielsen et al. paper which teaches introducing a few meters special intermediate fiber spliced in between the DCF and the standard fiber and applying it to the technology of Gruner-Nielsen et al. (6490398) which teaches introducing special intermediate fiber spliced in between the DCF and the approximately 100km of standard fiber (col. 9 line 65 to col. 10 line 35) to obtain the instant invention. It would have been obvious to one of ordinary skill in the art at the time the invention was made to make such a combination for the purpose of more explicitly stating Gruner-Nielsen et al.'s invention. Additionally, It would have been obvious to one of ordinary skill in the art at the time the invention was made to make such a combination because it is notoriously well known (NWK) to use approximately 100 km of standard fiber in such applications.

Furthermore, although Gruner-Nielsen et al. paper/Gruner-Nielsen et al. (6490398) combination does not explicitly state “the ratio of the first length to the second length is not less than 35”, it is clear that that even if Gruner-Nielsen et al. paper’s “few meters” of special intermediate fiber were interpreted equal to 20 meters, the limitation “the ratio of the first length to the second length is not less than 35” is still taught by the Gruner-Nielsen et al. paper/Gruner-Nielsen et al. (6490398) combination. I.e.,  $100\text{km}/0.02\text{km} = 5000$ , which is much greater than 35.

Finally, although Gruner-Nielsen et al. paper/Gruner-Nielsen et al. (6490398) combination does not explicitly state “and the end to end total dispersion of said span has a pre-selected value at 1550 nm” it would have been obvious because it is NWK to do so.

Thus claim 8 is rejected.

#### ***Allowable Subject Matter***


Claims 3-7, 9-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Mooney whose telephone number is 703-308-6125. The examiner can normally be reached during weekdays, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 703-308-4881. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956. An alternative useful number for status inquiries is 703-306-3329.

  
Michael P. Mooney  
Examiner  
Art Unit 2877

  
Frank G. Font  
Supervisory Patent Examiner  
Art Unit 2877

FGF/mpm  
11/17/03